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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,644	05/29/2001	Hong-Yih Juang	CYNTEC-9001	7996

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Bo-In Lin
13445 Mandoli Drive
Los Altos Hills, CA 94022

EXAMINER

SEFER, AHMED N

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 12/18/2002

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/867,644

Applicant(s)

JUANG ET AL. 

Examiner

A. Sefer

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 1-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed on 9/30/02 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins US No. 4,788,523 in view of Coates et al. US PG-Pub 2002/0075131.

Robbins discloses in fig. 7 a resistor array comprising a plurality of resistors 234 comprising a base; a plurality of electrodes 222 composed of conductive material disposed directly on said base wherein said base between every two of said electrodes having a precisely controlled distance for providing a precisely defined resistance for each of said resistors, but does not disclose a metallic bulk base.

Coates et al disclose (see page 2, par. 0021 and claim 5) an embedded resistor disposed on metallic bulk base.

Therefore, it would have obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Coates et al with Robbins' device, since that would not only provide a stronger support system but also a better heat dissipation.

As to claim 16, Robbins discloses at least an electrode layer of said conductive material disposed on each of said electrodes to form an electrode for each of said electrodes.

As to claim 17, Robbins discloses a plurality of scribing lines disposed between said resistors for scribing said resistor array into a plurality of resistors each comprising at least two electrodes.

4. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins US No. 4,788,523 in view of Coates et al. US PG-Pub 2002/0075131.

Robbins discloses in fig. 7 a resistor comprising a plurality of resistors 234 comprising a base; at least electrodes 222 composed of conductive material disposed directly on said base wherein said base between said two of said electrodes having a precisely controlled distance for providing a precisely defined resistance for each of said resistor, but does not disclose a metallic bulk base.

Coates et al disclose (see page 2, par. 0021 and claim 5) an embedded resistor disposed on metallic bulk base.

Therefore, it would have obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Coates et al with Robbins' device, since that would not only provide a stronger support system but also a better heat dissipation.

5. Claims 18 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Coates et al. as applied to claims 15 and 30 above, and further in view of Thomas et al. (J. Vac. Sci. Technol., Vol. 13, No. 1, Jan/Feb. 1976).

The combined references disclose all the claimed subject matter but do not specifically disclose a nickel-copper alloy metallic material.

Thomas et al. disclose in fig. 2 a low TCR metallic material composed of a metal plate comprising a nickel-copper alloy.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use a nickel-copper alloy metallic material, since having a metallic material comprising same material as a resistor/electrode would save material thereby reducing cost.

6. Claims 20-22 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Coates et al. as applied to claims 15 and 30 above, and further in view Sone et al. (JP 2000-173801).

The combined references fail to specifically disclose resistors having resistance ranging between one milli-ohm to ohm.

Sone et al disclose in figs. 1-10 plurality of electrode columns disposed on a metal plate having a precisely defined position for providing precisely defined resistance for each resistors. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to dispose metal plate having a precisely defined position for providing precisely defined resistance for each resistors, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As to claims 21, 22, 35 and 36, Sone et al disclose low resistance resistors could be achieved by adjusting dimensions of certain elements of the device. Robins discloses a length of a resistor of about 2.54 mm. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to use electrodes and resistors of a suitable dimensions, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

7. Claims 19 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Coates et al. as applied to claims 15 and 30 above, and further in view Shimada (JP 8-22903).

The combined references fail to specifically disclose an electrode layer disposed on each of said electrodes comprising a copper layer and a tin-lead alloy layer on each of said electrode column.

Shimada discloses an electrode layer disposed on each of electrode columns 2 comprising a copper layer 7 and a tin-lead alloy layer 9 on each of said electrode columns.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ a copper layer and a tin-lead alloy layer on each of said electrode columns, since that would control solder wetting degradation and improves background surface of nickel plating.

8. Claims 23-25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Coates et al and Thomas et al. (J. Vac. Sci. Technol., Vol. 13, No. 1, Jan/Feb. 1976).

Robbins discloses in fig. 7 a resistor array comprising a plurality of resistors 234 each comprising a base; a plurality of column-shaped electrodes disposed directly on said base and having a precisely controlled distance for providing a precisely defined resistance for each of said resistor, but does not disclose a metallic bulk base or electroplated electrodes.

Coates et al disclose (see page 2, par. 0021 and claim 5) embedded resistors disposed on metallic bulk base.

Thomas et al disclose electroplated electrodes composed of low TCR metallic material.

Therefore, it would have obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Coates et al with Robbins' device, since that would not only provide a stronger support system but also a better heat dissipation. It would have been obvious to one skilled in the art at the time the invention was made to use electroplated electrodes, since that would provide the capability of reducing a conductor resistance.

As to claim 24, Robbins discloses a plurality of scribing lines disposed between said resistors for scribing said resistor array into a plurality of resistors each comprising at least two electrodes.

As to claim 25, Thomas et al. disclose in fig. 2 a metallic material composed of a metal plate comprising a nickel-copper alloy.

As to claim 31, Robbins discloses at least an electrode layer of said conductive material disposed on each of said electrode to form an electrode for each of said electrode columns.

9. Claims 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Coates et al and Thomas et al. (J. Vac. Sci. Technol., Vol. 13, No. 1, Jan/Feb. 1976).

Robbins discloses in fig. 7 a resistor comprising a plurality of resistors 234 each comprising a base; at least two column-shaped electrodes 222 disposed directly on said base and having a precisely controlled distance for providing a precisely defined resistance for each of said resistor, but does not disclose a metallic bulk base or electroplated electrodes.

Coates et al disclose (see page 2, par. 0021 and claim 5) an embedded resistor disposed on metallic bulk base.

Thomas et al disclose electroplated electrodes composed of low TCR metallic material.

Therefore, it would have obvious to one skilled in the art at the time the invention was made to incorporate the teaching of Coates et al with Robbins' device, since that would not only provide a stronger support system but also a better heat dissipation.

It would have been obvious to one skilled in the art at the time the invention was made to use electroplated electrodes, since that would provide the capability of reducing a conductor resistance.

As to claim 38, Thomas et al. disclose in fig. 2 metallic material composed of a metal plate comprising a nickel-copper alloy.

10. Claims 27-29 and 40-42 rejected under 35 U.S.C. 103(a) as being unpatentable over Robbins in view of Coates et al and Thomas et al as applied to claims 23 and 37 above, and further in view of Sone et al. (JP 2000-173801).

The combined references fail to specifically disclose resistors having resistance ranging between one milli-ohm to ohm.

Sone et al disclose in figs. 1-10 precisely defined resistance for each resistor. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to dispose metal plate having a precisely defined position for providing precisely defined resistance for each resistors, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

As to claims 28, 29, 41 and 42, Sone et al disclose low resistance resistors could be achieved by adjusting dimensions of certain elements of the device. Robbins discloses a length of a resistor of about 2.54 mm. Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to use electrodes and resistors of a suitable dimensions, since it has been held that where the

general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

11. Claims 26 and 39 are rejected under 35 U.S.C. 103(a) as being as being unpatentable over Robbins in view of Thomas et al as applied to claims 23 and 37 above, and further in view of Shimada (JP 8-22903).

The combined references fail to specifically disclose column-shaped electroplated electrode comprising a copper layer and a tin-lead alloy layer.

Shimada discloses electroplated electrode comprising a copper layer 7 and a tin-lead alloy layer 9.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ a copper layer and a tin-lead alloy layer, since that would control solder wetting degradation and improves background surface of nickel plating.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Kinnebrew et al US ref. 3,916,071 disclose a resistive device comprising a metal base.

b. Zandman et al. US ref. 4677413 disclose Precision power resistor with very low TCR.


13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (703) 605-1227.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on (703) 308-6601.

ANS
December 16, 2002



NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800